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ENVIRONMENTAL GLOSSARY

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DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

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ENVIRONMENTAL GLOSSARY

with

Metric Conversion Tables

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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

Enactment of NEPA (the National Environmental Policy Act of 1969, Public Law 91–190), established the Federal Government policy "to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." To implement this policy, the Bureau of Reclamation employs environmental specialists responsible primarily for assuring that environmental impact statements are in compliance with NEPA. Reclamation engineers often assist in preparation of these statements, and at times review those of other agencies. The statements are designed to provide administrative personnel with factual information regarding the environmental impacts of proposed Bureau projects.

This glossary of environmental terms was prepared specifically for Bureau of Reclamation personnel who write and review environmental assessments and environmental impact statements, to ensure that the terminology of various disciplines is understood by all specialists and is used in a consistent manner. Support data come from a wide variety of sources, including universities and Federal and State fish and game agencies. Included are definitions used by various professional disciplines, such as algology, archeology, bacteriology, chemistry, dendrology, fish and wildlife biology, geology, hydrology, and physiology. The glossary is by no means a complete list of the professional terms for these sciences; it is presented as an aid to mutual understanding.

A

Abdomen—
That part of the body known as the belly.

Abdominal—
Pertaining to the belly.

Aberrant—
Atypical, departing from the normal form.

Abiotic—
Absence of life.

Absorption—
The taking in of fluids or other substances by cells or tissues.

Abutment—
The action or place of abutting, as the part of a structure that is the terminal point or receives thrust or pressure.

Acclimation—
The adjustment of an organism to a new habitat or environment.

Accretion—
The process of growth whereby material is added to the outside of nonliving matter.

Acid—
Capable of donating hydrogen ions. Solutions of acids have a sour taste, change the color of litmus paper from blue to red, and neutralize bases.

Acidophilic—
Living in acid or acid conditions.

Acre-foot—
The quantity of water (43,560 cubic feet) that would cover 1 acre (0.4047 ha) to a depth of 1 foot (304.8 mm).

Activated Sludge—
Material containing a very large and active microbial population produced in one method of sewage disposal by aeration of sewage.

Adaptation—
Adjustment to environmental conditions.

Adipose—
Pertaining to lipid or fat.

Adipose Fin—
A small fin-like projection behind the dorsal fin of certain fish.

Adsorption—
Adhesion of molecules to solid surfaces.

Aeolian—
Materials which have been moved and redeposited by wind action.

Aerate—
To impregnate with gas, usually air.

Aerial Cover—
The ground area circumscribed by the perimeter of the branches and leaves of a given plant or group of plants (generally used as a measure of relative density).

Aerobe—
An organism which requires the presence of free oxygen for respiration.

Aerobic (Oxybiotic)—
Living only in the presence of free oxygen.

Aerosol—
Particulate matter suspended in air. The particulate matter may be in the form of dusts, fumes, or mist.

Aerotaxis—
Orientation of organisms toward or away from oxygen.

Age Class—

A grouping of organisms in which all of the individuals originated in the same regeneration period.

Age Group—

Animals of the same age in a population.

Aggregate—

The sand or gravel added to cement in making concrete or mortar.

Agronomic—

Pertaining to agronomy, which is the science of soil management and the production of field crops.

A Horizon—

The stratum of soil consisting of one or more of the following layers: A_0 horizon, partly decomposed or matted plant remains lying on top of the mineral soil (duff); A_{00} horizon, the relatively fresh leaves and other plant debris, generally of the previous year, lying on A_0 horizon (litter); A_1 horizon, the surface mineral layer, relatively high in organic matter, usually dark in color; A_2 horizon, below the A_1 horizon, in places the surface layer, usually lighter in color than the underlying horizon, in which leaching of solutes and suspended materials occurs; A_3 horizon, transitional to the B horizon, more like A than B, sometimes absent.

Airshed—

Atmospheric zone potentially influenced by air pollutants from various sources.

Albinism—

A condition in which the normal pigment of the skin, hair, eyes, etc., is lacking.

Albino—

An individual lacking normal pigmentation.

Alevin—

A young fish which has not yet absorbed its yolk sac.

Algae—

Simple plants containing chlorophyll. Most live submerged in water.

Algicide—

A chemical substance which is toxic to algae.

Alimentary—

Pertaining to the digestive tract or to digestion.

Alkaloids—

Chemical substances having alkaline properties and containing nitrogen which are found in plants. Can be toxic if ingested by animals.

Allelopathy—

The influence of plants upon each other caused by products of metabolism; e.g., creosote bush produces a toxic substance which inhibits the growth of other plants in the immediate vicinity.

Allochthonous—

The exotic species of a given area. (*See* Autochthonous.) Also refers to deposits of material that originated elsewhere; e.g., drifted plant material on the bottom of a lake.

Allopatric—

Having separate and mutually exclusive areas of geographical distribution.

Alluvial—

Material deposited by running water, such as clay, silt, sand, and gravel.

Alluvial Fan—

A sloping mass of sand, clay, etc., that widens out like a fan where a stream gradually slows down as it enters a plain.

Alluvial Materials—

Materials that are transported and deposited by the action of flowing water (primarily streams and rivers).

Alpine—

The zone in a mountain system which lies above the timberline.

Altricial—

Animals which, following birth or hatching, are slow in the attainment of a condition of self maintenance.

Ambient—

The natural conditions (or environment) in a given place and time.

Ambient Air—

The unconfined space occupied by the atmosphere.

Ambient Standard—

Maximum allowable levels of specific polluting materials permitted by State, Federal, or local laws.

Amictic Lakes—

Lakes which are covered by ice throughout the year. Generally refers to lakes of the Antarctic and very high altitudes.

Amino Acid—

An organic compound containing both an amino group (NH_2) and a carboxyl group (COOH). Amino acids are the building blocks of proteins.

Ammonification—

The formation of ammonia compounds from organic materials containing nitrogen.

Amnion—

The innermost membrane which encloses the embryo in mammals, birds, and reptiles.

Amphibian—

An animal capable of living either in water or on land.

Anabolism—

A metabolic process by which organic substances are built from inorganic substances, or a complex organic substance is built from simple organic substances.

Anadromous—

Fish which live in salt water but migrate to fresh water to spawn. (*See* Catadromous, Diadromous.)

Anaerobe—

An organism having ability to grow in the absence of free oxygen.

Anaerobic (Anoxybiotic)—

Living in an area depleted of free oxygen.

Anal Fin—

The fin immediately posterior to the anus of fish.

Anatomy—

The scientific study of the structure of animals and plants.

Anhydrous—

Having no water.

Anion—

An ion possessing a negative electric charge.

Annual—

A plant which completes its life cycle and dies within 1 year or less.

Annual Ring—

A layer of wood formed in one complete growing season, occasionally more than one layer may be formed in a given season.

Antagonism—

Growth inhibition of one organism caused by unfavorable conditions created by the presence of another organism.

Anterior—

Pertaining to the head or front end of an animal.

Antibiosis—

Generally, a substance which prevents life.

Anticline—

A geological structure or arch formed by strata from opposite sides dipping from a common line.

Antimicrobial—

Chemical or biological agents which inhibit microbial growth.

Anus—

The posterior opening of the digestive tract.

Aphotic—

The zone of deep water where no light penetrates; pertaining to an absence of light.

Apomixis—

Asexual reproduction of organisms, including vegetative propagation.

Apterous—

Without wings.

Aquatic—

Growing in water, not terrestrial.

Aquiculture—

The use of artificial means to increase the production of aquatic organisms in fresh or salt water.

Aquifer—

A porous soil or geological formation lying between impermeable strata in which water may move for long distances; yields ground water to springs and wells.

Arable—

Land suitable for cultivation by plowing or tillage, does not require clearing or other modification.

Arboreal—

Living in trees.

Arthropod—

An invertebrate with jointed legs, such as an insect or crustacean.

Arthropodophagous—

Consumer of arthropods (crayfish) as a dietary source.

Artifact—

Something made by man, especially primitive man.

Ash—

Noncombustible mineral matter as contained in coal. These minerals are generally similar to ordinary sand, silt, and clay in chemical and physical properties.

Aspection—

Seasonal variations in the appearance of vegetation or of its constituent parts such as blooming, fruiting, foliation, and defoliation.

Assimilation—

The process of transforming consumed nutrients into body substances.

Association—

All organisms living together in any given combination of environmental conditions.

Asymmetrical—

Pertaining to animals whose opposite sides are not alike.

Atlatl—

A short board or stick, 20 to 24 inches (508 – 609.6 cm) long, fitted with a handle at one end and a groove or peg at the other, used in throwing as a dart or lance. Widely used in the New World.

Atrophy—

The withering away of the body or body parts.

Attenuated (Body Shape)—
Flattened and greatly elongated.

Atypical—
Not typical.

Auditory—
Pertaining to the ear; sense of hearing.

Aufwuchs—
Aquatic organisms, both plant and animal, which live on or around submersed material.

Autecology—
That part of ecology which deals with individual species.

Authorization—
An act by the Congress of the United States which authorizes use of public funds to construct a project.

Autochthonous—
Refers to a local origin; e.g., an indigenous species, deposits produced within a lake.

Autogenic Succession—
A successional series in which one stage modifies the habitat in such a way that it is replaced by another stage; e.g., deciduous forest replacing a pine forest.

Autolysis—
Self lysis; the breakdown of organisms by their own enzyme system.

Autotrophic—
Refers to organisms which are capable of producing organic substances from inorganic materials by means of energy received from outside the organism; e.g., plants using chlorophyll and sunlight to produce organic material.

Auxiliary Uncontrolled Earth Channel Spillway—
Natural and/or artificial earth channel used as a secondary spillway to supplement the service spillway with only an overflow crest or channel section to control flow.

Available Nutrient—
That quantity of a nutrient element or compound that can be readily absorbed and assimilated for growth.

Available Water (Plant)—
That portion of water in the soil that can be readily absorbed by plant roots.

Avian—
Of or having to do with birds.

Avifauna—
All birds of a given region.

Azeotrope—
Any mixture which has a constant boiling point at a specific concentration.

Azonal—
Designating or of zones of soil that cannot be sharply distinguished from one another because, for example, they are of recent formation.

B

Bacteriology—
The scientific study of bacteria.

Bacteriophage—
Ultramicroscopic virus particles of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA) which infect only bacteria. Literally, eaters of bacteria. Phage are extremely host specific and grow only in the presence of living host cells.

Bajada—

Outwash detrital slope at base of a mountain.

Ballast—

Gravel or broken stone laid in a railroad bed.

Barrier—

The blockage of migratory or daily movement of biota.

Basal Area—

The area enclosed by the circumference of a tree trunk, measured at a level 4 feet (1.21 meters) above the ground.

Base—

Oxides or hydroxides of metals. Capable of accepting hydrogen ions. Bases will neutralize acids and will turn the color of litmus paper from red to blue.

Base Exchange Capacity—

A measure of the absorptive capacity of a soil for bases, or exchangeable cations (OH^-).

Basophilic—

Living in base or basic conditions. Also, staining readily with basic dyes.

Batch Plant—

A facility for mixing materials to produce concrete in individual batches.

Beaching Slope—

Comprised of stones from 3 to 8 inches (76.2 to 203.2 mm) in size, laid in a layer from 1 to 2 feet (304.8 to 609.6 mm) thick for revetting below the level of stone pitching on an embankment or on the side of a reservoir.

Behavior—

Reaction of an animal to its environment.

Benefication—

A general term for converting coal to some other form of energy such as coke, petroleum, or natural gas.

Benthos—

Organisms living in or on the bottom of a lake, pond, ocean, etc.

Berm—

A ledge or shoulder, as along as the edge of a road or canal.

Biennial—

A plant which produces seeds during its second year of life and then dies.

Binomial Nomenclature—

The scientific method of naming flora and fauna to the generic and specific level.

Bioaccumulation—

The uptake of substances from the environment, other than food. Generally, the uptake of environmental pollutants.

Bioassay—

A method of determining the quantity of a substance necessary to affect test organisms under specified laboratory conditions.

Biocenosis—

A loosely defined group of interacting organisms occupying the same habitat and utilizing the same resources.

Biochemical Oxygen Demand (BOD)—

Represents the amount of dissolved oxygen that will be required from water during the bacterial assimilation of organic pollutants. The difference in oxygen concentration of a water sample after 5 days of incubation.

Biocide—

A chemical substance capable of killing.

Biology—

The scientific study of life.

Biomass—

The total mass or amount of living organisms in a particular area or volume.

Biome—

A complex community of all living organisms; e.g., tundra biome, grassland biome, desert biome.

Biometry—

The application of statistical methods in the study of biological problems.

Biota—

The plant and animal life of a region.

Biotic Potential—

The inherent capacity of an organism to reproduce and survive, which is pitted against limiting influences of the environment.

Biotope—

The smallest geographical unit of a habitat, characterized by a high degree of uniformity in the environment and its plant and animal life; e.g., a decaying stump.

Bloom—

A concentrated growth of phytoplankton (algae).

Blowdown—

The removal of a portion of poor quality water (high TDS) and its replacement with an equal volume of better quality water (low TDS), such that the quality of the final mixture of water in the system remains within the required limits for the industrial process.

Boiling Point—

The temperature at which liquid is converted to vapor.

Bonds—

Electrochemical forces which are responsible for holding atoms together, forming molecules.

Bony Fish—

Fish with a bony skeleton rather than a cartilaginous one.

Boreal—

Forest type consisting chiefly of conifers. In North America it extends from Newfoundland to Alaska.

Borrow—

Material excavated from one area to be used as fill material in another area.

Bosque—

A grove or community of trees in a given area.

Botany—

The branch of biology dealing with plants.

Bottom Lands—

Those lands immediately adjacent to, and slightly higher than an existing stream channel.

Brackish—

Somewhat saline water.

Branchia—

Gills.

Breeding Density—

The density of sexually mature organisms in a given area during the breeding period.

Breeding Potential—

The maximum rate of increase in numbers of individuals of a species or population under optimum conditions.

Breeding Rate—

The actual rate of increase of new individuals in a given population; the breeding potential minus limiting factors.

Brood—

Noun—All the young birds in a given nest or being raised by a given female bird.

Verb—The act of an adult bird when it is keeping young birds warm.

Brood Parasite—

In birds, a species which lays its eggs in the nest of another species, which normally assumes subsequent parental care.

Browser—

An animal which feeds on leaves, twigs, and young shoots of trees or shrubs; i.e., deer.

BTU—

An abbreviation for British Thermal Unit, usually considered to be that amount of heat needed to raise the temperature of 1 pound of water from 63°F to 64°F.

Buffer—

A chemical substance in a solution which resists the change in pH when acid or base is added.

Buffer Species—

Alternate prey species exploited by predators when a more preferred prey is in relatively short supply; i.e., if rabbits are scarce, foxes will exploit more abundant rodent populations.

Burinated (Burin)—

A flake or blade stone tool with a small, angled chisel edge or a sharp, beaked point used for sculpturing and engraving purposes.

C

Calcareous—
Having sufficient accumulation of calcium carbonate to produce a pH of over 7.0.

Canopy—
The uppermost layer of a forest or woodland, consisting of crowns of trees or shrubs.

Carbon Monoxide (CO)—
A colorless, odorless, tasteless gas consisting of one carbon and one oxygen atom.

Carcinogen—
Any substance capable of causing cancer.

Cardiac—
Pertaining to the heart.

Cardinal Temperature—
Most favorable, or optimal, temperature for growth of bacteria.

Carnivore—
An organism which acquires life-sustaining nutrients by utilizing animals as food.

Carrying Capacity—
The maximum number of a wildlife species that a given area will support through the most critical period of the year.

Casual Species—
Species which occur rarely or without regularity in a given community.

Catabolism—
The metabolic process whereby complex or simple organic compounds are broken down into simpler substances.

Catadromous—

Fish which migrate downstream to spawn. Generally, fish which live in fresh water but migrate to salt water to spawn. (*See* Anadromous, Diadromous.)

Catalyst—

A substance which either accelerates or retards a chemical reaction but which itself remains unchanged after completion of the reaction. (*See* Enzyme.)

Catchment Basin—

A unit watershed; an area from which all the drainage water passes into one stream or other body of water.

Cation—

An ion possessing a positive electric charge.

Cation Exchange—

Ion exchange in which one cation (a positively charged ion) such as sodium or hydrogen is substituted for one or more other cations (such as calcium or magnesium in hard water).

Caudal—

Refers to the tail region of an organism.

Caudal Fin—

The large tail fin of fish.

Center Pivot Sprinkler—

A sprinkler system in which the pressure water source is in the center and a system of pipes and sprinkler heads rotates or pivots around the central point to water a given circular area.

Centimeter—

A unit of length measurement in the metric system where 2.54 centimeters equals 1 inch

Cephalic—

Pertaining to the head.

CEQ—

Abbreviation for Council on Environmental Quality.

c.f.s.—

A measure of a moving volume of water; i.e., cubic feet per second (0.0283 cubic meter per second). Synonymous with ft^3/s and shortened to "second-feet."

Chalcedony—

A variety of quartz widely used by prehistoric man for chipped stone implements.

Chaparral—

Low and often dense scrub vegetation characterized by shrubs or dwarf trees with mostly evergreen leaves; e.g., evergreen oak, buckbrush.

Character—

Any trait of an organism.

Chemical Oxygen Demand (COD)—

A measure of the oxygen equivalent which is required for the oxidation of an organically polluted water supply.

Chemotaxis—

Orientation of an organism in relation to a chemical gradient.

Chitin—

A hard, complex organic substance found on the outside of certain animals providing protection from the environment; e.g., crayfish, tortoise.

Chlorophyll—

The green pigment in plants responsible for photosynthesis.

Chorology—

The scientific study of the geographic distribution of organisms.

Cienaga—

A swamp or marsh.

Class—

In taxonomy, a major subdivision of a phylum.

Climax Community—

Final or stable community in a successional series.

Clone—

All of the asexually (vegetatively) reproduced offspring from a single original individual.

Clutch—

All the eggs of birds, reptiles, or amphibians of a given nest.

Clutch Size—

Number of eggs in a clutch.

Coal Fired—

A power generating facility using coal as a source of energy.

Coal Gasification—

The process by which coal is converted to a gas, usually methane.

Coenzyme—

A substance closely associated with and activating an enzyme.

Cofferdam—

A barrier constructed in a body of water to form an enclosure from which the water can be pumped to permit free access to the area within.

Cohort—

A group of individuals in the same age class.

Cold-water Fishery—

Generally, water or a water system which has an environment suitable for salmonid fishes.

Coliform—

A general term for the group of bacteria which comprise all of the aerobic and facultatively anaerobic, gram-negative (type of strain related to cell wall composition), nonspore-forming, rod-shaped

bacteria which ferment lactose (milksugar) with gas formation within 48 hours at 35°C. Examples: *Escherichia, Citrobacter, Klebsiella*. (*See* Fecal Coliform, Indicator Organism (Fecal).)

Colluvium—

A deposit of rock fragments and soil material accumulated at the base of steep slopes as a result of gravitational action.

Colony—

A group of single or multicellular individuals living together.

Commensal—

An organism which lives with two or more individuals with benefit usually to one and injury to none.

Community—

A group of plants and animals which occupy a given locale.

Compressed (Body Shape)—

Flattened from side to side; deeper than broad.

Conifers—

Cone-bearing trees or shrubs. Mostly evergreens such as pine, cedar, spruce, etc.

Conservation Pool—

(*See* Conservation Storage.)

Conservation Storage (or Capacity)—

That water (or capacity) that is stored for use and will be released as needed for project purposes.

Consumers—

Organisms of a food chain which feed upon other organisms.

Consumptive Use—

Total amount of water taken up by vegetation for transpiration or building of plant tissue, plus the unavoidable evaporation of soil moisture, snow, and intercepted precipitation associated with vegetal growth.

Contiguous—

In actual contact with; also, near or adjacent to.

Contour Plowing and Contour Furrowing—

Conservation practices in which plowing or furrowing machinery is operated along the contours of the land, rather than up and down or across slopes, in order to reduce surface water runoff and erosion.

Coppice Mound—

A small mound of stabilized soil material around desert shrubs.

Cores—

Stones from which flakes have been removed to make implements. A prepared core is one which has been purposefully worked so that the shape of flakes or blades can be controlled.

Corridor—

A narrow strip of land reserved for location of transmission lines, pipelines, and service roads.

Cosmopolitan—

(*See* Ubiquitous.)

Coteau—

A series of moraines.

Coterminous—

Having a common boundary.

Cover—

That part of the environment, living or dead, utilized by animals for resting, feeding, nesting, and protection.

Covert—

A geographical unit of wildlife cover.

Crepuscular—

An animal that is active in the twilight hours, both morning and evening.

Cretaceous—

Relating to the late period of Mesozoic era; chalky.

Crop Rotation—

The practice of alternating crop types to maintain fertility levels, improve soil condition, avoid insect or disease infestations, etc.

Cruising Radius—

Distance between geographic locations at which an individual animal can be found at various hours of the day, season, or various years.

Cryophyle—

A plant growing on snow or ice; e.g., "red snow," an algae.

Cryptozoic—

Refers to animals living in darkness as under stones or in caves.

Cubic Feet per Second (ft^3/s) (c.f.s.)—

A measure of a moving volume of water. One $ft^3/s = 0.0283\ m^3/s$.

Cultural Resource—

Any building, site, district, structure, or object significant in history, architecture, archeology, culture, or science.

Cutaneous—

Pertaining to the skin.

Cutoff Trench—

An impervious barrier beneath a dam to impede seepage.

Cycle—

A period of time within whlch a round of regularly recurring events or phenomena is completed.

Cytology—

The scientific study of cells.

D

Dactyl—
Pertaining to the finger or toe.

Dead Pool—
Reservoir storage that is below the controls of the dam structure and cannot be released from the reservoir.

Debitage—
Flakes, chips, cores, and other types of lithic debris.

Decant (Water)—
Remove or draw water from a reservoir without disturbing the sediment or lower liquid layers.

Deciduous—
Falling off at an end of a growing period (season) or at maturity, as some leaves, antlers, insect wings, etc. Commonly used term to distinguish trees which shed their leaves as opposed to evergreens which retain their leaves. Examples: cottonwood, oak, elm, aspen.

Decomposers—
Organisms such as fungi and bacteria which break down complex compounds into their constituent units.

Deflation—
Refers to the force of wind erosion (blow outs).

Dehydrogenation—
The removal of hydrogen from a compound.

Demersal—
Generally, fish eggs or organisms which hatch on the bottom of a lake or stream.

Demography—
Description and study of human vital statistics and population dynamics.

Density—

The number per unit area of individuals of any given species at any given time.

Density-dependent Factor—

Any environmental factor that is dependent upon population density to be fully effective.

Density-independent Factor—

Any environmental factor that operates without regard to the population density.

Depletion—

Total loss of water from the stream due to consumptive uses, evaporation, seepage, and evapotranspiration.

Depressed (Body Shape)—

Flattened from above; broader than deep.

Desert Crust—

A hard layer containing calcium carbonate, gypsum, or other binding material, exposed at the surface in desert regions.

Deserticolous—

Inhabiting deserts.

Desert Pavement—

The layer of gravel or stones left on the land surface in desert regions after removal of the fine material by wind action.

Desert Varnish—

A glossy sheen or coating on stones and gravel in arid regions.

Dessicate—

To remove moisture from a substance. To dry up.

Detention Dam—

A dam built to store streamflow or surface runoff, and to control the release of such stored water.

Detritus—

Organic debris.

Detrivorous—

Feeding on animal wastes.

Dew Point—

The temperature at which a certain body of air is capable of holding no additional water vapor, so that any decrease in temperature or any increase in water vapor will result in condensation of the vapor into liquid.

Diadromous—

Fish which migrate freely between marine and fresh water. (*See* Anadromous, Catadromous.)

Diagnostic Tool—

Applies to any artifact which, because of form, shape, or function, provides chronological or manufacturing information.

Diastrophism—

Process of deformation that produces folds in the Earth's crust.

Diatoms—

Microscopic single-celled organisms having cell walls (shells) of silica; diatoms may occur as single cells or colonies and be either planktonic or attached to a substrate.

Diel—

Referring to the 24-hour day, particularly the contrast between the fluctuating light and dark portions.

Dike Embankment—

An embankment of earth for restraining the waters of a river.

Dimictic Lakes—

Lakes which turn over twice per year (spring and autumn). (*See* Turnover.)

Dimorphous—

Occurring in two forms.

Dioecious—

Having male and female reproductive organs in separate individuals. (*See* Monoecious.).

Disclimax—

An enduring climax community altered by man's disturbance.

Disease—

A particular destructive process in an organism with a specific cause and characteristic symptoms.

Dispersion—

The distribution of animals of a given locale.

Dissolved Oxygen (DO)—

Perhaps the most commonly employed measurement of water quality. Low DO levels adversely affect fish and other aquatic life. The total absence of DO will lead to the development of an anaerobic condition with the eventual development of odor and esthetic problems. Ideal DO for fish life is between 7 to 9 mg/l. Critical levels of DO, for nearly all fish, are between 3 and 6 mg/l. Most fish cannot survive when DO falls below 3 mg/l.

Distribution Line—

Low voltage electric powerline, usually 69 kilovolts or less.

Diurnal—

Occurring every day, generally in daylight. Diurnal animals are generally active only during the daylight hours.

Diversion Dam—

A barrier built across a stream to divert all or some of the water.

Diversion Structure—

A channel excavated to cause a stream or river to bypass either preliminary construction work or during construction only.

Divertible Return Flow—

Water returning to the river below a dam in the form of either ground water seepage or irrigation runoff that would increase the riverflow above the normal or historical amount and could be diverted into ditches with headgates below the dam.

Dominance (Ecological)—

The condition in communities in which one or more species, by means of their numbers, coverage, or size, have considerable influence upon the conditions of existence of associated species.

Dorsal—

Pertaining to the back of an animal.

Dorsal Fin—

The fin on the back of the fish.

Drift (Geology)—

Material of any kind which is deposited in one area after having been removed from another, most commonly used in reference to glacial drift.

Dryfarming—

Growing crops through irrigation without the aid of additional water.

Dysphotic—

The zone of deep water which is almost without light.

Dystrophic Lakes—

Lakes with a very low lime content and high humus content resulting in a brown color of the water. The lakes are generally nutrient poor.

E

Easement—

A nonpossessing interest held by one party in land of another party whereby the first person is accorded partial use of such land for a specific purpose. It restricts but does not abridge the rights

of the fee owner to the use and enjoyment of his land, subject to the enjoyment of the easement holder's rights.

Ecology—

That branch of the biological sciences which deals with the relationships between living organisms and their environment.

Ecological Succession—

The transition of species of a given area through a definite ecological stage; i.e., through succession of species composition, grasslands become tree-bearing forests.

Ecosphere—

The layer of earth and troposphere inhabited by living organisms.

Ecosystem—

A complex system composed of a community of fauna and flora taking into account the chemical and physical environment with which the system is interrelated.

Ecotone—

A transition area between plant communities which has some of the characteristics of each.

Edaphic—

The chemical, physical, or biological characteristics of a given water and soil environment that influence organisms.

Edge Effect—

The influence of two communities upon their adjoining margins or fringes, affecting the composition and density of the populations in these bordering areas.

Effective Precipitation—

That portion of precipitation which remains on the foliage or in the soil that is available for evapotran-

spiration and reduces the withdrawal of soil water by a like amount.

Effluent—
A discharge or emission of a liquid or gas.

Egest—
To regurgitate indigestible matter.

EIS—
Abbreviation for Environmental Impact Statement.

Embryo—
A young organism in early developmental stages.

Embryology—
The scientific study of the development of an organism.

Emersion Zone—
The uppermost portion of the eulittoral. The zone lies above the water level most of the year.

Emigration—
The movement of an animal out of a given area, generally without returning.

Endangered Species—
Generally taken to mean any species or subspecies whose survival is threatened with extinction.

Endemic—
A species restricted to a given geographical location. Native species to a given locale.

Endoparasite—
A parasite living within the body of its host.

Enteric Bacteria—
Bacteria of the intestinal tract.

Entomology—
The study of insects.

Entrainment—

Process by which aquatic organisms suspended in water are pulled through a pump or other device.

Entropy—

A measure of the degree of disorder within a system.

Environment—

The sum total of all biological, chemical, and physical factors to which organisms are exposed.

Enzyme—

A catalyst peculiar to living matter. All enzymes are protein, found in all living systems, and functional in extremely minute concentrations. When an enzyme and a substrate are combined, the resultant is the enzyme and a product as illustrated below:

$$\text{Enzyme (E)} + \text{substrate (S)} \rightleftharpoons \text{enzyme-substrate complex (ES)} \downarrow \text{Enzyme} + \text{products (P)}$$

or more conveniently,

$$E + S \rightleftharpoons ES \longrightarrow E + P$$

(*See* Catalyst.)

EPA—

Abbreviation for Environmental Protection Agency.

Ephemeral—

Refers to short duration; e.g., organisms with short life spans, a stream whose only flow is a result of precipitation.

Epicenter—

That point on the Earth's crust which is directly above the focus of an earthquake; focus being that point within the Earth which is the center of an earthquake.

Epifauna—

Part of the benthos living on the mud surface.

Epilimnion—

The upper, warmer portion of a lake, separated from the hypolimnion by a thermocline.

Epiphyte—

An organism growing on the surface of another organism.

Erode—

To wear away or remove the land surface by wind, water, or other agents.

Escape Covert—

Vegetation which is intended or used by animals for protection from predators.

Escarpment—

A long, inland cliff or steep slope, usually high, formed by erosion or possibly by faulting.

Esthetics—

Pertains to the beautiful or pleasing. Is generally an emotional judgment of that perceived.

Estival—

Refers to the summer season.

Estivation—

Summer hibernation.

Estuary—

The zone between the fresh water of a stream and the salt water of an ocean.

Ethiopian—

Zoogeographical region which includes Africa south of the Sahara, southern Arabia, and Madagascar.

Eugenics—

The study of the improvement of the genetic constitution of a population or species, especially the human race.

Eulittoral—

That area of the shoreline lying between the minimum and maximum yearly lake level fluctuation.

Euphotic—

Relating to the upper, well-illuminated zone of a lake where photosynthesis occurs.

Euryhaline—

Organisms with a wide tolerance for changes in salt concentration.

Euryphagous—

Utilizing a wide variety of foods.

Eurythermal—

Organisms with a wide tolerance for changes in temperature.

Eurytopic—

An organism with a wide range of distribution.

Eutrophic Lake—

A lake possessing low or a complete absence of oxygen in the deeper portion in midsummer, rich in nutrients and plankton.

Eutrophication—

Enrichment of a body of water by the addition of nutrients which stimulate the growth of aquatic plants and may cause a decrease in the organoleptic properties of the water source.

Evapotranspiration—

The total water loss from the soil, including that by direct evaporation and that by transpiration from the surfaces of plants.

Even-aged—

Refers to a stand of trees in which only small differences in age occur between the individuals.

Evergreen—

A tree or shrub which has green leaves throughout the year.

Eviscerate—

Remove internal organs.

Excretion—

The discharge of metabolic wastes.

Exotic Species—

Introduced species. Not indigenous to a given area.

Expiration—

The process of expelling air from the lungs.

Extant—

In biology, a species which is not extinct; still existing.

External Drainage—

The movement of water across the surface of the land to outlets such as natural stream channels or waterways.

Extirpate—

To eliminate or cause to be eliminated.

Eyrie—

The nest or brood of a bird of prey, such as an eagle.

F

Faciation—

In ecology, a subdivision of an association determined by species composition.

Facultative Anaerobe—

An organism which can grow in the presence or absence of oxygen (normally prefers the presence of oxygen).

Fallow—

Refers to cropland left idle except for tillage in order to destroy weeds and accumulate water and nutrients for use of a crop to be planted later.

Family—

In taxonomy, a category containing one or more genera which have similar characteristics.

Fauna—

All animal life associated with a given habitat, country, area, or period.

Fecal Coliform—

Same description as coliform except fecal coliforms are grown in a water bath at 44.5± 0.2°C for 24±2 hours with the production of gas. Example: *Escherichia coli*.

Fecal Streptococcus—

Bacteria of the intestinal tract characterized by ability to grow at relatively high pH and temperature. Used as an indicator of recent fecal pollution by warm blooded animals, including man.

Fecundity—

Relative ability of an animal to produce young.

Fee Simple Title—

An absolute fee. A fee without limitations to any particular class of heirs or restrictions, but subject to the limitations of eminent domain, escheat, police power, and taxation. An inheritable estate.

Feral—

An animal or population of animals which has escaped from cultivation or domestication and exists in the wild.

Fetus—

An unborn offspring of a mammal.

Filamentous—

Having filaments, or long thread-like appendages.

Fire-cracked Rocks—

Rocks which were cracked due to the intense heat of fire.

Firm Water Supply—

An assured minimum supply of water under the most adverse water year supply conditions.

Flakes—

The thin, flattened pieces removed from a stone by pressure or percussion flaking techniques.

Flaring—

The process of burning excess or unwanted gas in the atmosphere.

Fledgling—

A young feathered bird capable of flight.

Flood Control Pool—

Reservoir volume above the conservation or joint-use pool that is kept empty to catch flood runoff and then evacuated as soon as possible to keep it in readiness for the next flood.

Flood Plain—

The nearly level land forming the bottom of a valley which usually is subject to flooding.

Flora—

All plantlife associated with a given habitat, country, or period. Bacteria are considered flora.

Fly Ash—

Fine, solid particles of noncombustible ash entrained in the exhaust gas of a furnace.

Flyway—

Any one of several established migration routes of birds.

Focus—

An archeological classification constituting a group of components which share an artifact type.

Forage—

Vegetation of all forms available for animal consumption.

Forage-acre Factor—

The part of a range that is covered with available vegetation which can be entirely eaten by livestock without damage to the range.

Forage Fish—

Generally, small fish which produce prolifically and are utilized as prey by predator fish.

Forb—

Any herb other than grass.

Foreshore—

A strip of land on the margin of a body of water; e.g., a lake or stream. The bottom land is intermittently exposed when the water level fluctuates.

Fossil Fuels—

Coal, oil, and natural gas. Remains of ancient plant and animal life.

Fossorial—

Animals that burrow in the soil.

Freeboard—

The vertical distance between normal water level and the crest of a dam or the top of a flume.

Free Living—

Not parasitic or attached.

Fry—

Fish between the egg and fingerling stages. Depending upon the fish species, it can measure from a few millimeters to a few centimeters.

ft^3/s—

Symbol for cubic feet per second. Metric designation is cubic meter per second (m^3/s) or liter per second (l/s).

Fungicide—
Chemical substance which kills fungi.

Fusiform (Body Shape)—
Torpedo shaped.

G

Gallinaceous—
Birds of a particular order (*Galliformes*) which nest on the ground and are chicken-like in appearance; e.g., pheasants, grouse, quail.

Gastric—
Pertaining to the stomach.

Gated Check Structure—
Structure placed in a canal to control the flow of water past the structure or to maintain the water surface.

Gated Concrete Service Spillway—
Overflow section of the dam restricted by use of gates which can be operated to control releases from the reservoir to ensure the safety of the dam and minimize downstream flood losses.

Gated Pipe—
Irrigation pipe with openings or gates through which water is released to irrigation furrows in the field.

Genera—
Plural of genus.

Genital—
Pertaining to reproductive organs.

Genotype—
Type species of a genus. The genetic makeup of an organism.

Genus—

In taxonomy, a group of closely related species comprised of common distinguishing characteristics.

Geotropism—

A response to gravity. In plants, the main roots grow downward and the main stems upward.

Gestation Period—

The period of time that the embryo or fetus is in the uterus of an animal.

Gill—

Respiratory organ for a given aquatic organism.

Gill Cover (Opercle)—

The flap-like covering which overlays the gills of fish.

Glacial Flour—

Material pulverized to the consistency of silt and clay by the movement of glaciers and ice sheets, often found in lakes and streams of glacier areas.

Graminivorous—

Feeding on grass.

Granivorous—

Feeding on seeds or grain.

Grazer (*also* Graminivorous)—

An animal which feeds on growing grass; i.e., mountain sheep, cattle.

Green Manure—

Plant material incorporated with the soil while green, or soon after maturity, to improve the soil.

Gregarious—

Species which live in herds or flocks. Living in company of others.

Grilse—

A young salmon which has returned to fresh water from the sea.

Gullet—

Same as esophagus.

Gyttja—

A lacustrine mud containing abundant organic material.

H

Habitat—

An area where a plant or animal lives. (Sum total of environmental conditions in the area.)

Haboob—

A sudden, rolling sandstorm brought on by high winds with a concomitant drop in temperature.

Half Life—

Time required for one-half of a given substance to disintegrate.

Halophytes—

Plants that tolerate large amounts of salt or alkali in the soil or water in which they live.

Hardness—

A characteristic of water which represents the total calcium and magnesium ion concentration. Hardness is generally expressed as mg/l (p/m) calcium carbonate.

Headgate—

The control works or gate at the entrance to a canal or conduit system.

Headworks—

Structure for diverting water into the head of a channel.

Heavy Metals—

Metallic elements generally occurring in trace amounts in water, including iron, manganese, copper, aluminum, zinc, cadmium, chromium, lead, arsenic, mercury, and vanadium. Usually considered to have an atomic number above 21.

Hectare—

A unit in the metric system used to measure surface area equal to 10 000 square meters or 2.471 acres.

Helokrene—

A marsh spring.

Hepatic—

Pertaining to the liver.

Herbaceous—

Like or pertaining to herbs.

Herbicide—

A toxic substance capable of killing vegetation forms.

Herbivore—

An organism which acquires life-sustaining nutrients by feeding on vegetation.

Heredity—

Transmission of traits from parents to offspring.

Hermaphrodite—

An animal which possesses both male and female reproductive organs.

Herpetofauna—

General grouping for reptiles.

Herpetology—

Study of reptiles and amphibians.

Herpetophagous—

Consumer of reptiles and amphibians as a dietary source.

Heterogenous—
Not from the same source, individual, or species.

Heteromyids—
Broad group of rodents which include pocket rats, kangaroo rats, and pocket mice.

Heterotrophic—
An organism that feeds on other organisms.

Hispid—
Covered with rough bristles, stiff hairs, or small spines.

Histology—
The scientific study of tissues and organs.

Holoarctic—
Circumpolar.

Holomictic Lake—
A lake with complete circulation (mixing).

Holotype—
The specimen on which the description of a new species is based.

Homeothermic (Homoiothermic)—
Warmblooded. Maintaining a relatively constant body temperature regardless of the temperature of the environment.

Homing—
The return of animal species to their spawning or breeding grounds.

Homochromous—
Alike in color.

Homogenous—
Composed of similar or identical parts; uniform.

Homomorphic—
Uniform shape and size.

Horse Nomads—
High Plains hunters, such as the Cheyenne Indians.

Host—

An organism which supplies benefits to another organism, generally a predator.

Humus—

Partially decomposed organic material found in soil and water.

Hybrid—

An organism resulting from a cross breeding between parents of different genotypes.

Hydrobiology—

The scientific study of life in water environments.

Hydrocarbons in Air—

Generally, unburned petroleum products which serve as reductant precursors in the formation of photochemical smog.

Hydrogenation—

The addition of hydrogen to a compound.

Hydrolysis—

The reaction of a compound with water resulting in the production of a weak acid and a weak base.

Hydrologic Cycle—

The cycle of water movement from the atmosphere to the earth by precipitation and its return to the atmosphere by interception, evaporation, runoff, infiltration, percolation, storage, and transpiration.

Hydrology—

The science dealing with water and snow, including their properties and distribution.

Hydrophyte—

A plant which requires water or very wet soil for growth. Examples: cattail, pondweeds, naiad.

Hypertonic Solution—

A solution which contains a higher concentration of solutes than a cell which is in the same solution.

Hypolimnion—

The lower, colder portion of a lake, separated from the upper, warmer portion (epilimnion) by a thermocline.

Hypothesis—

A proposition, condition, or principle which is assumed in order to explain certain facts and guide in the investigation of others.

Hypotonic Solution—

A solution which contains a lower concentration of solutes than a cell which is in the same solution.

I

Ichthyology—

The scientific study of fish.

Immigration—

The movement of an animal into an area not previously occupied by that animal.

Impervious Material—

Refers to relatively waterproof soils, such as clay, through which water will percolate at about one millionth of the rate at which it will pass through gravel.

Impingement—

Striking or dashing against; to be forced against a screen (fish) by water pressure so that escape is impossible.

Inactive Storage (or Capacity)—

That water stored (or capacity) in a reservoir that is above dead storage but not used to store water which will be released for project purposes.

Inbreeding—

The mating of closely related individuals.

Indicator—

An organism, species, or community which indicates the presence of certain environmental conditions.

Indicator Organism (Fecal)—

An organism which, while not pathogenic itself, indicates the possible presence of pathogenic species. (*See* Coliform.)

Indigenous—

A species which is native to a given area.

Infauna—

Part of the burrowing benthos population.

Ingest—

To take a substance from the outside into the digestive tract.

Inorganic Compound—

A chemical compound not possessing carbon.

Insecticide—

A toxic substance capable of killing insects.

Insectivorous—

Organisms which consume insects as a primary food source.

In Situ—

In its original position or place.

Insolation—

The rate at which radiant energy is incident directly from the sun per unit horizontal area at any place on or above the surface of the earth.

Interception—

The process by which precipitation is retained by vegetation before the moisture reaches the ground.

Interfluve—

A ridge between river valleys.

Intermittent (Stream)—
Flowing at intervals; recurrent; periodic.

Internal Drainage—
The movement of water down through the soil profile to porous aquifers or to surface outlets at lower elevation.

Interspecific—
Relations between species.

Interspersion—
The irregular occurrence of plant communities and species which provide cover for animals within a limited area.

Intertidal Zone—
The area of a shore between the levels of a high and low tide.

Intraspecific—
Relations between individuals within a species.

Inundate—
To cover with impounded waters or floodwaters.

Invader Plant Species—
Species, often annuals, which are not a part of the climax vegetation.

Inversion—
The phenomenon in which a layer of cool air is trapped by a layer of warm air above it, precluding the release of the bottom air.

Invertebrates—
Literally, all animals without a vertebral column.

In Vitro—
Biological experiments performed in test tubes or other laboratory glassware. (*See* In Vivo.)

In Vivo—
Biological experiments performed within living organisms. (*See* In Vitro.)

Ion—
An electrically charged atom or group of atoms.
Irritability—
The ability to respond to a stimulus.
Irruption—
A sudden or dramatic increase in a given wildlife population.
Isotonic Solution—
A solution whose osmotic concentration is the same as that of the cell contents.
Isotope—
One of several possible forms of an element, differing by their respective atomic weights.

J

Joint-use Storage (or Capacity)—
That storage (or capacity) that is shared by more than one use at a time.
Juvenile—
Young of a species.

K

Kilovolt—
1,000 volts.

L

Labial—
Pertaining to the lips.
Lacustrine—
Living in lakes. Pertaining to lake environment.

Laramide Orogeny—
In broad sense, series of diastrophic movements which began at the end of the Cretaceous era.

Larva—
An immature form which must pass through one or more metamorphic changes before becoming an adult.

Larvivore—
Any group of organisms which consumes larva as a food source.

Late Pleistocene—
Time period preceding the Holocene era and extending to 2 or 3 million years ago.

Lateral—
The side of the body of an animal.

Lateral Line—
A series of sensory receptors along the sides of a fish.

Lenses—
Geologic deposits bounded by converging surfaces (at least one of which is curved), thick in the middle and thinning out toward the edges, resembling a convex lens.

Lentic—
Standing waters, such as lakes, ponds, and marshes.

Life Cycle—
The various stages an animal passes through from egg fertilization to death.

Life Expectancy—
The average time an animal is expected to live after reaching a certain age.

Life Zone—

Any series of biogeographic zones into which a continent, region, etc., is divided both by latitude and altitude on the basis of the characteristic animal and plant life in a zone.

Limnetic—

Pertaining to open waters of lakes.

Limnology—

The study of freshwater lakes.

Liter—

A unit of liquid measurement in the metric system. One liter is equal to approximately 1 quart.

Lithic—

Of or pertaining to stone.

Litter—

The uppermost organic materials, partly or not at all decomposed, on the surface of the soil.

Littoral—

A zone of a lake or ocean in which light penetrates to the bottom.

Lode—

A mineral deposit consisting of a zone of veins; a mineral deposit in consolidated rock.

Lode Claim—

A mining claim on an area containing or thought to contain a vein or lode (stream, channel, or water-course).

Loess—

Wind-deposited silt.

Loessial—

Medium-textured materials (usually silt or very fine sand) which have been transported and deposited by wind action. These materials may be deposited in depths ranging from less than 1 foot to well over 100 feet.

Lotic—
Flowing waters, such as rivers and streams.
Lysis—
Destruction of cells.

M

M&I—
Abbreviation for municipal and industrial use of water.
Macroorganisms—
Organisms visible with the unaided eye.
Macrophytes—
Large forms of vegetation.
Macroscopic—
Visible with the unaided eye.
Maggot—
Wormlike larva of a fly.
Mammalogy—
The study of mammals.
Mammalophagous—
Consumer of mammals as a dietary source.
Mandible—
A jaw.
Marine—
Pertaining to the ocean, sea, or other bodies of salt water.
Marshlands—
Areas interspersed with open water, emergent vegetation (hydrophytes), and terrestrial vegetation (phreatophytes).
Mastication—
The process of chewing food.

Maternal—
Referring to a mother.

Median—
Pertaining to the middle or midline of the body.

Megawatt—
One million watts of electrical power.

Melanism—
The development of a dark pigment in an organism.

Meromictic Lake—
A lake with incomplete circulation (mixing).

Meroplankton—
An organism that is in the plankton during part of its life cycle.

Merriam's Effect—
Division of North American life zones based chiefly on temperature and altitude criteria.

Mesic—
Requiring a moderate moisture content to carry out life functions.

Mesophil—
Organisms (bacteria) which thrive at a moderate temperature range, generally between 20°–40°C.

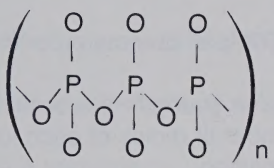
Metabolism—
The sum total of the chemical transformations (anabolism and catabolism) occurring in the body of a living organism.

Metalimnion—
A layer of water between the epilimnion and hypolimnion. Thermocline.

Metamorphosis—
The transformation of a larval form into an adult form.

Metaphosphate—

Individual PO_3^- groups which are polymeric in structure and can be thought of as being built up of PO_3^- units in a chain with each phosphorus atom associated with four oxygen atoms



Mg/l—

Abbreviation for milligrams per liter.

Microaerophil—

An organism which is inhibited or killed by the presence of too much oxygen but is incapable of growth with too little oxygen.

Microbiota—

The microscopic plants and animals of a given habitat.

Micron—

The 1/1000 part of a millimeter.

Microorganisms—

Organisms so small as to require magnification for observation.

Microphytes—

Small vegetation forms.

Microscopic—

Visible only with the aid of some magnifying device.

Midden—

A dunghill or a refuse heap, especially from a primitive culture.

Migration—

Moving from one locale to another, particularly during a change of season.

Milliliter—

The 1/1000 part of a liter, or 0.0338 of a fluid ounce.

Millimeter—

The 1/1000 part of a meter, or 0.03937 of an inch.

Molarity—

The relative strength of a solution based upon the total number of moles of each ionic species in one liter of solution.

Molecule—

A group of atoms bonded together.

Molt—

Shed of all or a portion of skin, hair, or feathers.

Monocline—

Rock strata which dips only in one direction.

Monoecious—

An individual having both male and female reproductive organs.

Monogamy—

Having but one mate throughout life.

Monomictic Lakes (Cold)—

Generally, lakes of the polar regions in which the waters never exceed 4°C. These lakes turn over only once per year.

Monomictic Lakes (Warm)—

Warm-water lakes which turn over once per year (winter) and where the temperature never falls below 4°C.

Monotypic—

A taxonomic category which contains only one subordinate unit. Example: A genus containing only one species.

Montane—

Zone of vegetation associated with mountain environments.

Moraine—

A mass of rocks, gravel, sand, clay, etc., carried and deposited directly by a glacier.

Moribund—

Almost dead. In the process of dying.

Morphology—

The scientific study of structure.

Mortality—

Death rate of a population.

Mottled—

Possessing spots of a different color than the main surface.

MPN (Most Probable Number)—

A statistical estimate of bacterial numbers in polluted water based on probability formulas.

Muskeg—

A bog in the northern part of North America characterized by an abundance of sphagnum moss and a greater or lesser abundance of shrubs and low trees.

Mutualism—

An association of two or more species where each species derives some benefit from the other.

N

Nannoplankton—

Floating, microscopic plant and animal life.

Naris—

One of the external openings of the nose (nasal cavity).

Nasal—

Referring to the nose.

Natality—

The production of offspring by a given animal population.

National Register—

The *National Register of Historic Places* is the federally maintained register of districts, sites, buildings, structures, architecture, archeology, and culture.

Native—

An animal which is indigenous to a given locale.

Natural Fertility—

Refers to fertility levels of soils in their natural or native state and without addition of fertilizer elements or other soil amendments.

Nearctic—

Zoogeographical region which includes North America north of most of Mexico and Greenland.

Necrosis—

The death of an organism or one of its parts.

Nekton—

Collectively, all macroscopic animals of lakes, ponds, oceans, rivers. Nekton move independently of currents; e.g., fishes, whales.

Neotropical—

Zoogeographical region which includes South America, Central America, the lowlands of Mexico, and the West Indies.

Nesteny—

The occurrence of larval or other juvenile characters in the adult stage of an organism, or the presence of an adult character in the larval stage.

Neuston—

Organisms associated with the surface film of a lake.

Neutral—

Neither significantly acid nor alkaline; i.e., possessing a pH of or near 7.0.

Niche (Habitat)—

The specific part or smallest unit of a habitat occupied by an organism.

Nidicolous—

Birds which remain in the nest following hatching, generally undeveloped and incapable of self-sustenance.

Nidifugous—

Birds which leave the nest immediately following hatching.

Nitrogen Oxides—

Nitrogen oxides (as hydrocarbons) participate in the photochemical reactions leading to photochemical smog formation. Nitric oxide forms during high temperature combustion (automobile engines and powerplants) and rapidly oxidizes to nitrogen dioxide which is a precursor to smog formation.

Nocturnal—

Active or functioning during the night.

Nuciferous—

Refers to nut-bearing trees.

Nutrient—

Food substance.

Nymph—

Immature form of an insect.

O

O&M—

Abbreviation for operation and maintenance.

Ocular—
Pertaining to an eye.

Olfactory—
Pertaining to the sense of smell.

Oligodynamic—
Very minute concentrations of heavy metals having the power to kill organisms.

Oligomictic Lakes—
Warm-water lakes where water temperature is considerably higher than 4°C the year round.

Oligothermal Organisms—
Organisms which are confined to a low range of temperatures.

Oligotrophic—
A body of water which lacks appreciable nutrients, minerals, and organisms. The dissolved oxygen concentration is generally high.

Omnivore (Omnivorous)—
A biological system which sustains itself by feeding on both animal and vegetable tissue.

Ontogeny—
Life history of the development of an organism.

Operational Losses—
Losses of water due to evaporation and seepage.

Operculum—
Gill cover in fish.

Optic—
Pertaining to the eye.

Order—
In taxonomy, a group of organisms allied between family and class.

Organic Compound—
A chemical compound containing the element carbon.

Organism—

A living biological system.

Organoleptic—

A general term used to describe the quality of air or water by use of the senses of smell, taste, and vision. A water supply with a high organoleptic rating has no odor, is generally tasteless, is perfectly clear, and is potable.

Oriental—

Zoogeographical region which includes India, Burma, Indochina, Malaya, Sumatra, Java, Borneo, and the Philippines.

Ornithology—

The study of birds.

Ornithophagous—

Consumer of birds as a dietary source.

Orographic—

Refers to mountains, or to relief characteristics of the land.

Orthophosphate—

A compound in which only one phosphorous atom is present.

ORV—

Abbreviation for off-road vehicles such as motorcycles, four-wheel drive jeeps, trucks, snowmobiles, etc.

Osmoregulation—

The adjustment of osmotic concentrations of solutes in fluids of organisms in response to environmental conditions.

Osmosis—

The tendency of a solvent to pass through a semipermeable membrane in order to equalize concentrations on both sides of the membrane.

Osseous—

Bony.

Ossified—

Hardened by deposits of mineral matter.

Otic—

Pertaining to the auditory system.

Outlet Channel—

A waterway or drainage channel provided to collect and carry away discharge.

Outwash—

Mineral materials which have been carried and sorted by water from high to low elevations. This would include glacial outwash (materials originally suspended in glaciers which have been moved and deposited by melt water).

Overchute—

Structure which carries water over a canal or road so that it does not flow into the canal or onto the road surface.

Overstory—

The layer of foliage in a forest canopy.

Oviparous—

Animals which lay eggs. (*See* Viviparous.)

Oxidation—

Generally, the addition of oxygen to a chemical species. The process by which electrons are removed from atoms or ions; e.g.,

$$FE^{+2} \longrightarrow FE^{+3} + e^{-}$$

Oxidation-reduction Reactions—

(*See* Redox Reactions, Oxidation, Reduction.)

Oxide—

A compound consisting of two elements, one of which is oxygen.

Oxygen Debt—

Lack of available oxygen to supply tissue in an organism.

P

Palearctic—
Zoogeographical region which includes Europe, all of Asia except its southern projections, and northern Africa.

Paleoecology—
Ecological studies of the past based on evidence collected from fossil remains.

Paleolimnology—
Studies of lake ecosystems based on evidence collected from preserved lake mud.

Palustrine—
Living in a marsh or swamp environment.

Pandemic—
Generally a disease which occurs over a wide geographical range.

Parasite—
An organism living in or on another organism at the expense of the latter.

Parent Material—
The unconsolidated mass from which the developed soil horizons have originated. As used here, this term also applies to relatively unconsolidated parent rock.

Parr—
Young anadromous fish between the larval stage and the time of migration to the sea.

Parr Marks—
Vertical dark bands along the sides of parr.

Parthenogenesis—
Offspring produced from unfertilized eggs. Unisexual reproduction.

Particulate Matter—

The most prevalent atmospheric pollutant is suspended particulate matter. Most particulate measuring devices are designed to measure the range between 1 to 10 microns. Larger particles settle out of the air. However, the smaller particles, <1 micron, are readily respirable, contributing significantly to respiratory diseases and reducing visibility.

Passerine—

Small or medium-size perching songbirds with grasping feet.

Paternal—

Referring to the father.

Pathogen—

An organism capable of causing disease.

Pediments—

Areas along the face of the uplifted mountain ranges which are relatively gently sloping, and which have been formed by several factors including sheet erosion and deposition, stream braiding, etc. The general slope of these areas is governed by the slope and erodibility of the underlying bedrock formations.

Pedologic—

Pertaining to the study of soils.

Pedology—

Study of the physical properties of soils.

Pelagic—

Pertaining to open water, generally the ocean.

Perennial—

A plant which lives for more than 2 years.

Peripheral Species—

A species or subspecies whose geographical distribution is at the margin of its range.

Periphyton—

Plankton which live attached to rooted aquatic plants.

Permeable Material—

That which allows water to pass through easily.

Pervious—

Capable of being penetrated through the pores (for example, sandstone).

Pesticide—

An agent used to kill plant or animal pests.

pH—

The negative logarithm of the hydronium ion (H_3O+) concentration. H_3O+ is commonly referred to as the hydrogen ion ($H+$) and is reported as the hydrogen ion concentration. A high pH value reflects a low $H+$ concentration (alkaline condition) whereas a low pH reflects a high $H+$ concentration (acid condition).

Phenology—

The study of recurring natural phenomena such as migrating of animals, leafing of trees, blossoming of plants, etc., in relation to the seasons.

Phenotype—

The outward appearance of a given species. A visible trait, not the actual gene constitution.

Photic—

The zone of water which is penetrated by sunlight.

Photochemical Oxidants—

Ozone (O) is the principal atmospheric oxidizing gas and is the oxidant monitored and reported collectively as oxidants. However, total oxidant content is greater than the ozone concentration. Certain plants show damage at low concentra-

tions. Ozone is a primary oxidant in the formation of photochemical smog. (*See also* Nitrogen Oxides, Hydrocarbons.)

Photosynthesis—
The process by which plants form the sugar glucose from carbon dioxide of air and water by utilizing chlorophyll and light.

Phreatophyte—
A plant that draws its water supply from ground water.

Phylogeny—
The evolutionary development of a group of related organisms.

Phylum—
In taxonomy, a primary division of the plant and animal kingdoms.

Physiognomy—
The appearance of vegetation as determined by the life form of the dominant plants; e.g., a grassland, a pine forest.

Physiography—
That branch of science that deals with the physical features of earth.

Phytogeography—
The science of plant distribution.

Phytoplankton—
Plant plankton.

Piscicide—
Chemical substance which is designed to destroy fish life.

Plankton—
Aquatic animals and plant life primarily dependent upon water current for locomotion.

Pleuston—

Community of floating organisms on the surface of a lake.

Plot—

An area of land that is studied or used for an experimental purpose, in which sample areas are often located.

Poikilothermic—

Coldblooded. Animals without the ability to regulate body temperature by physiological means; e.g., fish.

Pollard—

A tree which has been cut back to the trunk to promote the growth of a dense head of foliage.

Pollution—

The alteration of the physical, chemical, or biological properties of the atmosphere or any water supply, including change in temperature, taste, color, turbidity, or odor, or the discharge of unnatural liquid, gas, solid, radioactive, or any other substance which is likely to create a nuisance problem or render the air and/or water supply injurious to public health or safety, or render the air and/or water supply detrimental to wild animals, birds, and fish, or other aquatic life.

Polyandry—

One female mating with two or more males.

Polygyny—

One male mating with two or more females.

Polymerization—

The formation of a complex chemical compound from homogenous smaller compounds.

Polymictic Lake—

A lake which shows continuous mixing at temperatures just over 4°C. Stratification does not develop.

Polytypic—

Refers to a species that occurs in various forms in different parts of its range.

Population—

An interbreeding group of plants or animals. The entire group of organisms of one species.

Population Dynamics—

The process of numerical and structural change within populations resulting from births, deaths, and movements.

Posterior—

Pertaining to the tail or rear end of an animal.

Potable—

Water which is fit for human consumption. Potable water should have a high organoleptic rating.

Potamology—

The scientific study of the chemical, physical, geological, and biological nature of a lotic environment.

Potamoplankton—

The plankton of a stream.

Pre-Clovis Culture—

The oldest known culture (before 1200 B.C.) sharing the fluted-point tradition, commonly known as an "early hunting culture."

Precocious—

Maturing early.

Predator—

An animal which gains nutrients by capturing and feeding upon other animals.

Prey—

An animal hunted or killed and used as a food source by another animal.

Primary Productivity—

The productivity of green plants. (*See* Secondary Productivity.)

Primordial—

The primitive form of an individual.

Producer—

An organism able to synthesize complex organic compounds from simpler inorganic compounds.

Productive Acres—

Classified irrigable acres reduced to exclude farmsteads, roads, ditches, and drains.

Productivity—

The ability of a population to recruit new members by reproduction.

Profundal—

Deepest part of the ocean or lake where light does not penetrate, is characteristically low in nutrients, has much silt, and few organisms as compared with the surface.

Protein—

Complex organic substance consisting of amino acids (nitrogenous compounds).

Protoplasm—

Living cell substance. Complex living material making up all organisms.

Protozoa—

Single-celled animals which inhabit fresh water, salt water, and soils.

Provenience—

The source of an object or artifact generally described in terms of a map location, stratified level, and/or depth from ground surface.

Psychrophil—

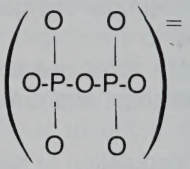
An organism (bacteria) which requires cold temperatures, below 20°C, for optimum growth.

Pulse—

The sudden appearance of a great abundance of plant plankton.

Pyrophosphate—

Two phosphate groups (PO_4) jointly sharing one oxygen atom.



Q

Quadrat—

A sampling area, most commonly one square meter, used for analyzing vegetation.

Quaternary Age—

Time period covering the last 2 or 3 million years (consists of the Pleistocene and Holocene).

R

Race—

A population within a species that differs in one or more inherited characteristics from other populations but not sufficiently to be classified as a separate taxonomic group.

Rain Shadow—

Refers to an area in which little or no rain falls because it is located to the leeward of mountains which on the opposite side are exposed to moisture-laden winds.

Range—

The geographical distribution of biological forms.

Raptor—

Birds of prey; e.g., hawks, eagles, falcons, osprey, vultures, and owls.

Raptorial—

Refers to a predatory animal with curved claws on its feet adapted for seizing prey; e.g., eagle, hawk, owl.

Recruitment—

The increase in population caused by natural reproduction or immigration.

Redd—

Depression in river or lake bed dug by fish for the deposition of eggs.

Redox Reactions—

Chemical reactions involving the movement of electrons where oxidation is equivalent to a loss of electrons and reduction to a gain of electrons. No oxidation reaction occurs without the concomitant reduction reaction, thus redox reactions. (*See* Oxidation, Reduction.)

Red Tide—

The visible red color attributed to waters, both marine and fresh, by the large buildup of certain flagellates.

Reduction (Chemical)—

Generally, the addition of hydrogen to a chemical species. The process by which electrons are added to atoms or ions; e.g.,

$$Fe^{+3} + e^{-} \rightarrow Fe^{+2}$$

Regolith—

Term used by soil scientists which is approximately equivalent to the term "soil."

Relict—

Generally, a species, population, etc., which is a survivor of a nearly extinct group. Any species or other taxon surviving in a small local area and widely separated from closely related species.

Relief—

The difference in elevations of the land surface.

Renal—

Pertaining to the kidney.

Replacement-in-kind—

Replacement of a feature to the standards of the existing feature.

Reproduction, Vegetative—

Propagation of a plant by stems, roots, or other asexual organs.

Residual Geologic Materials—

Bedrock materials or weathered or decomposed bedrock materials which are still in their place of origin and have not been appreciably transported by water, wind, or gravity.

Retention Dams—

Small earthen dams designed to retain water for only short periods of time in order to prevent excessively rapid runoff and erosion.

Revetment—

A structure or obstacles placed along the margins of a stream in order to protect the banks from erosion.

Rheotaxis—

Response to water current; e.g., fish, stimulated by water current, orient themselves into the current.

Right-of-way—

The privilege or right which one person, or persons particularly described, may have of passing on or over the land of another. Usually, an easement on or over the land of another.

Riparian—

Living on or adjacent to a water supply such as a riverbank, lake, or pond.

Riprap—

Stones placed on the face of a dam or on stream banks or other land surfaces in order to protect them from erosion.

Riverine—

Riparian; pertaining to a riverbank.

Roe—

The eggs of fish.

Root Sucker—

A plant sprout arising from a root.

Ruminant—

Cud-chewing mammal.

S

Salt—

A compound derived from an acid by replacing hydrogen with a metal or an electropositive radical; e.g.,

$$HCl + NaOH \rightarrow NaCl + HOH$$
$$HCl + NH_4OH \rightarrow NH_4Cl + HOH$$

Sansorial—

Refers to an organism that has adaptations for climbing; e.g., Virginia creeper.

Saprobes—

Organisms which live in water systems polluted with organic material.

Saprophyte—

Any plant which utilizes decaying organic matter as a food source. Characteristic of many bacteria and fungi.

Scarp—
The steep-faced edge of a cuesta or a plateau.

Scat—
Dung piles.

Scavenger—
An animal which eats the decomposing corpses of other animals not killed by itself.

Sclerophylls—
Hard-leaved plants.

Secchi Disk—
Black and white disk used to visually measure light penetration through water.

Second Feet—
Shortened term for cubic feet per second (c.f.s.) and the symbol ft^3/s. This term is being replaced by cubic meter per second ($m/^3s$).

Secondary Productivity (Terrestrial)—
The productivity of animal populations. (*See* Primary Productivity.)

Seismicity—
The phenomenon of earth movements or seismic activity.

Sere—
A series of ecological communities which follow one another in a slow but definite sequence.

Serotinous—
Refers to late opening such as cones of some pine trees which remain on the trees for several years without opening.

Sessile—
Attached to a substrate. Not free moving.

Seston—
Particulate matter of water systems.

Settleable Solids—

A broad term used to describe particulate matter in water. The particles consist of bacteria, plankton, silt, sand, clay, and finely divided organic matter.

Sex Ratio—

The number of males and females in a population.

Shale—

An easily splitting sedimentary rock formed from clay or silt.

Shard—

A broken piece of pottery.

Shelter Belt—

A long windbreak of living trees and shrubs extending over an area larger than a single farm.

Silva—

A treatise or description of trees of a given region.

Siome—

Current boundary where fish aggregate.

Slurry—

A watery mixture of insoluble matter pumped to form an impervious barrier beneath a dam to impede seepage.

Smog—

The haze which results from the sun's effects on certain pollutants in the air.

Sodium Adsorption Ratio (SAR)—

A ratio for soil extracts and irrigation waters used to express the relative activity of sodium ions in exchange reactions with soil.

Soil Amendments—

Refers to materials exclusive of nitrogen, phosphorous, and potassium which are added to the soil to improve workability, chemical balance, and yield levels. This would include trace elements and such other materials as gypsum and sulfur.

Soil Cement—

A mixture of soils and cement that is consolidated to form a solid mass, used for slope protection.

Soil Texture—

Refers to the relative proportions of the various size groups (sand, silt, and clay) of the individual soil grains in a mass of soil.

Soil Wastes—

Garbage, refuse, sludges, and other discarded solid materials resulting from industrial, commercial, and agricultural operations and from community activities. Does not include solids or dissolved material in domestic sewage or other significant pollutants in water resources, such as silt, dissolved or suspended solids in industrial wastewater effluents, dissolved materials in irrigation flows, or other common water pollutants.

Spawn—

To lay eggs, especially of fish.

Species—

The basic category of biological classification intended to designate a single kind of animal or plant. Any variation among the individuals may be regarded as not affecting the essential sameness which distinguishes them from all other organisms.

Specific Electrical Conductance—

A measure of the ability of water to conduct an electrical current, expressed in micromhos per centimeter at 25°C. It is related to the number and specific chemical types of ions in the water solution.

Spillway—

Overflow channel of a dam.

Sporadic—

Widely scattered biological form.

Standard Length—

A measurement of fish which extends from the anterior point on the snout to the base of the caudal fin.

Standing Crop—

The organic material present in a given environment at a given time.

Stenotopic—

Organisms which display a very narrow range of tolerance; e.g., stenophotic, stenothermal.

Stilling Basin—

An area or basin used to dissipate the energy of the flow.

Stratification—

Thermal layering of water both in lakes and streams. Lakes usually have three zones of varying temperature: epilimnion—top layer; metalimnion (thermocline)—middle zone of rapid temperature change; and hypolimnion—bottom layer.

Stratigraphy—Geological—

The study of rock strata or rock layers. The branch of geology that deals with the definition and description of major and minor natural divisions of mainly sedimentary rocks available for study in outcrop or from the subsurface.

Biological—The arrangement of plants in layers within a stand; e.g., a spruce forest has a tree, a shrub, a herb, and a moss layer.

Thermal—The formation of distinct temperature layers in a body of water; e.g., epilimnion (upper), metalimnion (thermocline); and hypolimnion (lower) zones.

Archeological—The study of the sequential relationship of depositional units containing material remains produced through human activity.

Stream Incision—

The cutting or eroding away of a streambank.

Strike (Geology)—

A line formed by the intersection of a horizontal plane and a geologic stratum.

Subadult—

An animal which is too young to breed but has all phenotypic characteristics of a breeding adult.

Succession—

(*See* Ecological Succession.)

Sulfur Dioxides—

The primary oxide which contributes to the formation of sulphate particles or droplets of dilute sulfuric acid. Sulfur dioxide, in the presence of suspended particulate matter, has shown synergistic health effects. Sulfur dioxide has been proved carcinogenic.

Supplemental Irrigation—

A process of providing water to vegetation by other than natural precipitation.

Surcharge—

A sudden increase in the flow of water into a reservoir.

Surcharge Pool—

Area with uncontrolled capacity which will be used when routing floods of greater magnitude than can be regulated by the flood control capacity while using normal flood control procedures. Water will not be stored in this pool for longer than required to route the floods.

Surface Acre—

The two-dimensional water surface of a lake, amounting to 43,560 square feet.

Survey—

An examination of an area designed to locate and evaluate the cultural resources that are, or may be, present. Surveys may be conducted at various levels of intensity or completeness.

Suspended Solids—

Particulate matter in water that can be removed by filtration.

Symbiosis—

Two or more species living together for their mutual benefit.

Symmetry—

Pertaining to an animal whose opposite sides are alike.

Sympatric—

Pertaining to two or more closely related species occupying identical or overlapping territories.

Synecology—

That part of ecology which deals with groups or organisms.

Synergism—

The joint action of two or more substances being greater than the action of each individual substance.

Synonymy—

A listing of all scientific names, correctly or incorrectly, which have been applied to a given species, group, etc.

Synoptic Flow—

Upper and lower layers of air moving in the same general direction.

T

Tactile—

Pertaining to the sense of touch.

Take Line—

The actual right-of-way boundary established for project use through authority granted by congressional approval and action.

Talus—

Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

Taxonomy—

The science of classification according to relationships of organisms.

TDS—

Abbreviation for total dissolved solids.

Teepee Rings—

Circles of stones believed to have held down the covers of teepees.

Terrestrial—

Not aquatic, refers to the land.

Territory—

An area over which an animal or group of animals establishes jurisdiction.

Thalweg—

Deepest part of river channel buried under alluvium.

Theory—

The possible explanation of phenomenon for which only a small amount of evidence is available.

Thermocline—

A place, in relation to a lake's depth, where there is an abrupt temperature change. An obvious temperature change between the upper warm portion of a lake and the lower cold portion. (*See* Epilimnion, Hypolimnion.)

Thermophile—

Organisms (bacteria) which require high temperatures, generally above 40°C, for optimum growth.

Thermotaxis—

Movement of organisms brought about by the stimulus of heat.

Thigmotaxis—

Movement of organisms brought about by the stimulus of contact.

Thoracic—

Pertaining to the area of the chest.

Threatened Species—

Any species which has the potential of becoming endangered in the near future.

Tidal Flats—

Areas of nearly flat, barren mud periodically covered by tidal waters.

Toe—

Point of intersection of bottom of a slope or embankment with the natural ground or level ground such as upstream or downstream toe of the dam.

Topography—

The physical shape of the ground surface.

Torrenticole—

A general term to define organisms living in swift waters.

Total Dissolved Solids (TDS)—

An aggregate of carbonates, bicarbonates, chlorides, sulfates, phosphates, nitrates, etc., of calcium, magnesium, manganese, sodium, potassium, and other cations which form salts. High TDS solutions have the capability of changing the chemical nature of water. High TDS concentrations exert varying degrees of osmotic pressures

and often become lethal to the biological inhabitants of an aquatic environment. The common and synonymously used term for TDS is "salt."

Total Length—

A measurement of fish from the tip of the snout to the tip of the caudal fin.

Toxic—

Pertaining to poison.

Toxin—

A poisonous substance generally of plant or animal origin.

Trace Element—

An element which is required by an organism in a very small quantity, or is present in small concentrations.

Trait—

Term used by geneticists as a synonym for character.

Transient Species—

A species that migrates through a locality without breeding or overwintering.

Translucent—

Almost transparent.

Transmission Line—

A facility for transmitting electrical energy at high voltage from one point to another point. Transmission line voltages are normally 115–kV or larger.

Transpiration—

Excretion in the form of vapor, as the giving off of water vapor from plants.

Traumatic—

Refers to a shock or wound, or the resulting condition in an organism.

Tree Limit (Line)—

The altitude in mountains, or in the southern or northern latitude, at which only isolated trees grow and beyond which only stunted forms occur.

Tribe—

A group of plants of related genera.

Tripton—

The nonliving segment of seston.

Trophic—

Refers to nutrition.

Trophic Level—

Place of an animal in the food chain.

Tropism—

The capacity of an organism to react to a stimulus by changing direction.

Troposphere—

The innermost part of the 12–mile (19.3 km) layer of air encircling the earth.

Truncated (Body Shape)—

Globe shaped.

Tuber—

An enlarged underground stem, tending to be oval or spherical in shape, usually rich in starch and capable of vegetative reproduction; e.g., potato.

Turbidity—

A measure of the extent to which light passing through water is reduced due to suspended materials. Excessive turbidity may interfere with light penetration and minimize photosynthesis, thereby causing a decrease in primary productivity. It may alter water temperature and interfere directly with essential physiological functions of fish and other aquatic organisms, making it difficult for fish to locate a food source.

Turnover (Lake)—

A process whereby the water on the bottom of a deep lake exchanges with the water on top. The process is generally caused by warming of weather with concomitant seasonal wind patterns. The same process occurs as the weather cools into the winter season.

U

Ubiquitous—

Plant or animal species capable of thriving under varying environmental conditions.

Undergrowth—

Collectively, the shrubs, sprouts, seedling and sapling trees, and all herbacious plants in a forest.

Understory—

A layer of foliage below the level of the main tree canopy.

Uneven-aged—

Refers to a forest in which considerable variation occurs in the age of trees.

Ungulates—

Hoofed animals.

Upper Republican Culture—

Represented by innumerable small pit-house villages strung out along the stream terraces from South Dakota across Nebraska, Kansas, and eastern Colorado. The culture seems to reflect the initial adjustment of a sedentary farming economy to an environment that offered the additional resource of buffalo hunting.

V

Valence—

The capacity for atoms or groups of atoms to combine or bond.

Variance—

Sanction granted by a governing body for delay or exception in the application of a given law, ordinance, or regulation.

Vascular—

Refers to vessels or ducts that conduct fluids in organisms.

Ventral—

Pertaining to the belly of an animal; opposite from dorsal.

Vertebrate—

Animals which have backbones or vertebral columns.

Vestigial—

Refers to a structure, function, or behavioral act of an organism that has so decreased in importance during the course of evolution that only a trace remains.

Viable—

Living, reproducing systems.

Virulent—

Degree of pathogenicity—something toxic or harmful.

Virus—

Ultramicroscopic, obligate intracellular parasites whose genetic material consists of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA) but never both within the same cell. Some viruses are used as indicators of pollution.

Visit—

A significant amount of time spent by one individual at a particular recreation facility during a 24–hour period.

Visitor Day—

Consists of 12 visitor hours which may be aggregated continuously, intermittently, or simultaneously by one or more persons at a recreation facility.

Viviparous—

Animals which bear living young (also ovoviviparous).

Volant (Volitant)—

Capable of flying.

W

Warm-water Fishery—

Generally, water or a water system which has an environment suitable for species of fish other than salmonids.

Water Right—

A grant, permit, decree, appropriation, or claim to the use of water for beneficial purposes, limited by the economical use and subject to other rights of older date of use, called priority, or prior appropriation.

Water Table—

The upper surface of free ground water.

Windbreak—

A planting of trees, shrubs, or other vegetation to protect soil, crops, etc., against the effects of winds.

Winter Kill (Fish)—

Typically, the death of large numbers of fish in a given lake due to the removal of oxygen by algae and/or bacteria during a prolonged period of winter ice or snow cover.

Woodland—

A generalized term used to refer to farming sites with pottery and burial mounds in the East (North America).

X

Xeric—

An arid system almost totally lacking water.

Xerophyte—

Plants which are structurally adapted to growing in dry or desert conditions. The plants often have a greatly reduced leaf surface area to prevent water loss; thick, fleshy parts for water storage; and many possess hairs, spines, or thorns. Examples: cacti, Joshua tree, yucca.

Y

Year Brood—

Synonymous with year class.

Year Class—

Animals born in a given year.

Yearling—

An organism which is over 1 but under 2 years old.

Z

Zoned Earth Dam—

A rolled-fill dam consisting essentially of an inner or enclosed impervious section supported by two or more outer sections of relatively pervious material.

Zoned Rolled-earthfill Structure—

(*See* Zoned Earth Dam.)

Zoogeography—

The science of the geographical distribution of animals.

Zoology—

The study of all aspects of animal life.

Zoonosis—

Animal disease transmitted to man.

Zooplankton—

Free swimming or floating animal plankton.

Zymogenous Flora—

Organisms found in large numbers immediately following the addition of readily decomposable organic materials.

BASIC PREFIXES

kilo- one thousand (a kilogram is 1000 grams)

centi- one hundredth (a centimeter is .01 of a meter)

milli- one thousandth (a milliliter is .001 of a liter)

The abbreviations you will most often use are these:

ABBREVIATIONS

meter	**m**	**gram**	**g**
centimeter	**cm**	**milligram**	**mg**
millimeter	**mm**	**kilogram**	**kg**
kilometer	**km**	**Celsius**	**C**
liter	**l**	**(write 00°C)**	
milliliter	**ml**		

FEET		METERS
1	=	.305
2	=	.61
3	=	.914
4	=	1.219
5	=	1.524
6	=	1.829
7	=	2.134
8	=	2.438
9	=	2.743
10	=	3.048

YARDS		METERS
1	=	.914
2	=	1.829
3	=	2.743
4	=	3.658
5	=	4.572
6	=	5.486
7	=	6.401
8	=	7.315
9	=	8.23
10	=	9.144

METERS		FEET
1	=	3.281
2	=	6.562
3	=	9.842
4	=	13.123
5	=	16.404
6	=	19.685
7	=	22.966
8	=	26.247
9	=	29.528
10	=	32.808

METERS		YARDS
1	=	1.094
2	=	2.187
3	=	3.281
4	=	4.375
5	=	5.468
6	=	6.562
7	=	7.655
8	=	8.749
9	=	9.843
10	=	10.936

INCHES		CENTI-METERS
1	=	2.54
2	=	5.08
3	=	7.62
4	=	10.16
5	=	12.7
6	=	15.24
7	=	17.78
8	=	20.32
9	=	22.86
10	=	25.4
11	=	27.94
12	=	30.48
13	=	33.02
14	=	35.56
15	=	38.1

INCHES		CENTI-METERS
16	=	40.64
17	=	43.18
18	=	45.72
19	=	48.26
20	=	50.8
25	=	63.5
30	=	76.2
40	=	101.6
50	=	127
60	=	152.4
70	=	177.8
75	=	190.5
80	=	203.2
90	=	228.6
100	=	254

CENT-METERS		INCHES
1	=	.394
2	=	.787
3	=	1.181
4	=	1.575
5	=	1.969
6	=	2.362
7	=	2.756
8	=	3.15
9	=	3.543
10	=	3.937
11	=	4.331
12	=	4.724
13	=	5.118
14	=	5.512
15	=	5.906

CENTI-METERS		INCHES
16	=	6.299
17	=	6.693
18	=	7.087
19	=	7.48
20	=	7.874
25	=	9.842
30	=	11.811
40	=	15.748
50	=	19.685
60	=	23.622
70	=	27.559
75	=	29.528
80	=	31.496
90	=	35.433
100	=	39.37

MILLI-METERS		DECIMAL INCHES
1	=	.039 37
2	=	.078 74
3	=	.118 11
4	=	.157 48
5	=	.196 85
6	=	.236 22
7	=	.275 59
8	=	.314 96
9	=	.354 33
10	=	.393 7
25	=	.984 25

MILLI-METERS		DECIMAL INCHES
50	=	1.968 5
75	=	2.952 76
100	=	3.937
150	=	5.905 5
200	=	7.874
250	=	9.842 5
300	=	11.811
350	=	13.779 5
400	=	15.748
450	=	17.716 5
500	=	19.685

MILES		KILO-METERS
1	=	1.609
2	=	3.219
3	=	4.828
4	=	6.437
5	=	8.047
6	=	9.656
7	=	11.265
8	=	12.875
9	=	14.484
10	=	16.093
11	=	17.703
12	=	19.312
13	=	20.922
14	=	22.531
15	=	24.14
16	=	25.745
17	=	27.359
18	=	28.968
19	=	30.578

MILES		KILO-METERS
20	=	32.19
30	=	48.28
40	=	64.37
50	=	80.47
60	=	96.56
70	=	112.65
80	=	128.75
90	=	144.84
100	=	160.9
200	=	321.9
300	=	482.8
400	=	643.7
500	=	804.7
600	=	965.6
700	=	1 126.5
800	=	1 287.5
900	=	1 448.4
1 000	=	1 609

KILO-METERS		MILES
1	=	.621
2	=	1.243
3	=	1.864
4	=	2.485
5	=	3.107
6	=	3.728
7	=	4.35
8	=	4.971
9	=	5.592
10	=	6.214
11	=	6.835
12	=	7.456
13	=	8.078
14	=	8.699
15	=	9.321
16	=	9.942
17	=	10.563
18	=	11.185
19	=	11.806

KILO-METERS		MILES
20	=	12.427
30	=	18.641
40	=	24.855
50	=	31.069
60	=	37.282
70	=	43.496
80	=	49.71
90	=	55.923
100	=	62.137
200	=	124.274
300	=	186.411
400	=	248.548
500	=	310.686
600	=	372.823
700	=	434.96
800	=	497.097
900	=	559.234
1 000	=	621.371

QUARTS		LITERS
1	=	.946 4
2	=	1.892 7
3	=	2.839 1
4	=	3.785 4
5	=	4.731 8
6	=	5.678 1
7	=	6.624 5
8	=	7.570 8
9	=	8.517 2
10	=	9.463 5

GALLONS		LITERS
1	=	3.785 4
2	=	7.570 8
3	=	11.356 2
4	=	15.141 6
5	=	18.927
6	=	22.712 4
7	=	26.497 8
8	=	30.283 2
9	=	34.068 6
10	=	37.854

LITERS		QUARTS
1	=	1.056 7
2	=	2.113 4
3	=	3.170 1
4	=	4.226 8
5	=	5.283 4
6	=	6.340 1
7	=	7.396 8
8	=	8.453 5
9	=	9.510 2
10	=	10.566 9

LITERS		GALLONS
1	=	.264 172
2	=	.528 34
3	=	.792 52
4	=	1.056 69
5	=	1.320 86
6	=	1.585 03
7	=	1.849
8	=	2.113 38
9	=	2.377 55
10	=	2.641 72

LIQUID OUNCES		MILLI-LITERS
1	=	29.574
2	=	59.147
3	=	88.721
4	=	118.294
5	=	147.868
6	=	177.441
7	=	207.015
8	=	236.588
9	=	266.162
10	=	295.735
11	=	325.309
12	=	354.882
13	=	384.456
14	=	414.029
15	=	443.603
16	=	473.176

LIQUID OUNCES		MILLI-LITERS
17	=	502.75
18	=	532.324
19	=	561.897
20	=	591.471
21	=	621.044
22	=	650.618
23	=	680.191
24	=	709.765
25	=	739.338
26	=	768.912
27	=	798.485
28	=	828.059
29	=	857.632
30	=	887.206
31	=	916.779
32 (quart)	=	946.353

MILLI-LITERS		LIQUID OUNCES
1	=	.034
2	=	.068
3	=	.101
4	=	.135
5	=	.169
6	=	.203
7	=	.237
8	=	.271
9	=	.304
10	=	.338
11	=	.372
12	=	.406
13	=	.44
14	=	.473
15	=	.507
16	=	.541
17	=	.575

MILLI-LITERS		LIQUID OUNCES
18	=	.609
19	=	.642
20	=	.68
25	=	.85
30	=	1.01
40	=	1.35
50	=	1.69
75	=	2.54
100	=	3.38
150	=	5.07
200	=	6.76
250	=	8.45
300	=	10.14
400	=	13.53
500	=	16.91
1 000 (liter)	=	33.81

OUNCES		MILLI-GRAMS
.01	=	283.495
.02	=	566.99
.03	=	850.486
.04	=	1 133.98
.05	=	1 417.476
.06	=	1 700.971
.07	=	1 984.466
.08	=	2 267.961
.09	=	2 551.457
.1	=	2 834.952
.11	=	3 118.447
.12	=	3 401.942
.13	=	3 685.438
.14	=	3 968.933
.15	=	4 252.428
.2	=	5 669.904
.25	=	7 087.38

OUNCES		MILLI-GRAMS
.3	=	8 504.856
.4	=	11 339.807
.5	=	14 174.757
.6	=	17 009.707
.7	=	19 844.657
.8	=	22 679.607
.9	=	25 514.557
1	=	28 349.523
2	=	56 699.046
3	=	85 048.569
4	=	113 398.09
5	=	141 747.61
6	=	170 097.13
7	=	198 446.65
8	=	226 796.17
9	=	255 145.69
10	=	283 495.21

MILLI-GRAMS		OUNCES
1	=	.000 035
2	=	.000 071
3	=	.000 106
4	=	.000 141
5	=	.000 176
6	=	.000 212
7	=	.000 247
8	=	.000 282
9	=	.000 317
10	=	.000 353
11	=	.000 388
12	=	.000 423
13	=	.000 459
14	=	.000 494
15	=	.000 529

MILLI-GRAMS		OUNCES
16	=	.000 564
17	=	.000 6
18	=	.000 635
19	=	.000 67
20	=	.000 705
25	=	.000 882
30	=	.000 106
40	=	.001 411
50	=	.001 764
60	=	.002 116
70	=	.002 469
75	=	.002 646
80	=	.002 822
90	=	.003 175
100	=	.003 527

OUNCES		GRAMS
.1	=	2.835
.2	=	5.67
.3	=	8.505
.4	=	11.34
.5	=	14.175
.6	=	17.01
.7	=	19.845
.8	=	22.68
.9	=	25.515

OUNCES		GRAMS
1	=	28.35
2	=	56.7
3	=	85.05
4	=	113.4
5	=	141.75
6	=	170.1
7	=	198.45
8	=	226.8
9	=	255.15
10	=	283.5

GRAMS		OUNCES
1	=	.035
2	=	.071
3	=	.106
4	=	.141
5	=	.176
6	=	.212
7	=	.247
8	=	.282
9	=	.317
10	=	.353
11	=	.388
12	=	.423

GRAMS		OUNCES
13	=	.459
14	=	.494
15	=	.529
16	=	.564
17	=	.6
18	=	.635
19	=	.67
20	=	.705
25	=	.882
50	=	1.764
75	=	2.646
100	=	3.527

°FAHRENHEIT		°CELSIUS
0	=	−17.78
5	=	−15
10	=	−12.22
20	=	−6.67
32	=	0
60	=	15.56
65	=	18.33
70	=	21.11
75	=	23.89
80	=	26.67
85	=	29.44
90	=	32.22

°FAHRENHEIT		°CELSIUS
95	=	35
98.6	=	37
100	=	37.78
101	=	38.33
102	=	38.89
103	=	39.44
104	=	40
105	=	40.55
110	=	43.33
150	=	65.55
200	=	93.33
212	=	100

°CELSIUS		°FAHRENHEIT
0	=	32
10	=	50
20	=	68
30	=	86
35	=	95
37	=	98.6
40	=	104
50	=	122
60	=	140
70	=	158
80	=	176
90	=	194
100	=	212

POUNDS		KILOGRAMS
1	=	.454
2	=	.907
3	=	1.361
4	=	1.814
5	=	2.268
6	=	2.722
7	=	3.175
8	=	3.629
9	=	4.082
10	=	4.536
11	=	4.99
12	=	5.443
13	=	5.897
14	=	6.35
15	=	6.804
16	=	7.257

POUNDS		KILOGRAMS
17	=	7.711
18	=	8.165
19	=	8.618
20	=	9.072
25	=	11.34
50	=	22.68
75	=	34.02
100	=	45.36
150	=	68.04
200	=	90.72
250	=	113.4
300	=	136.08
400	=	181.44
500	=	226.8
750	=	340.9
1 000	=	453.6

KILO-GRAMS		POUNDS	KILO-GRAMS		POUNDS
1	=	2.205	17	=	37.479
2	=	4.409	18	=	39.683
3	=	6.614	19	=	41.888
4	=	8.819	20	=	44.092
5	=	11.023	25	=	55.116
6	=	13.228	50	=	110.231
7	=	15.432	75	=	165.347
8	=	17.637	100	=	220.462
9	=	19.842	150	=	330.693
10	=	22.046	200	=	440.924
11	=	24.251	250	=	551.152
12	=	26.456	300	=	661.387
13	=	28.66	400	=	881.85
14	=	30.865	500	=	1 102.311
15	=	33.069	750	=	1 653.467
16	=	35.274	1 000	=	2 204.623

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